

AMENDMENTS TO THE CLAIMS

1. (Original) A process of producing an aluminum material having an aluminum nitride (AlN) region on the surface thereof, comprising the steps of:

preparing an aluminum material containing CuAl_2 ; and

plasma nitriding the aluminum material, to thereby form an AlN region on the surface of the aluminum material.

2. (Original) The process according to Claim 1, further comprising a step of sputtering the aluminum material to remove Al_2O_3 present on the surface of the aluminum material prior to the plasma nitriding step.

3. (Previously presented) The process according to Claim 1, wherein the plasma nitriding step is carried out at -167 to 630°C .

4. (Previously presented) The process according to Claim 1, wherein the plasma nitriding step comprises a treating step which consists of a step of applying a pulse voltage of -50 V to -50 kV for $0.1\ \mu\text{s}$ to $10\ \text{ms}$ followed by a application suspending step having $0.1\ \mu\text{s}$ to $100\ \text{ms}$; or a treating step which comprises a step of applying a continuous D.C. voltage of -50 to -800 V, in an activated first nitriding gas atmosphere.

5. (Original) The process according to Claim 4, wherein the first nitriding gas is a gas made from nitrogen and hydrogen and/or a gas comprising nitrogen gas and hydrogen gas.

6. (Previously presented) The process according to Claim 1, wherein AlN is produced at a rate of $0.05\ \mu\text{m}/\text{hour}$ or more in the plasma nitriding step.

7. (Previously presented) The process according to Claim 2, wherein the sputtering step is carried out using the aluminum material as the negative electrode by applying a D.C. voltage of -50 V to -4000 V in an atmosphere of chemically activated second nitriding gas.

8. (Previously presented) The process according to Claim 1, wherein CuAl_2 is contained in the AlN region of the obtained aluminum material.

9-20. (Canceled)

21. (Previously presented) The process according to Claim 1, wherein the AlN region has a thickness of 0.1 μm or more.

22. (Previously presented) The process according to Claim 1, wherein the AlN region is grown at a rate of 0.05 $\mu\text{m}/\text{hour}$ or more.

23. (Previously presented) The process according to Claim 1, wherein the AlN region has a Vickers hardness (Hv) of 4 GPa or more.

24. (Previously presented) The process according to Claim 1, wherein the AlN region has a thermal conductivity of 100 W/mK or more.

25. (Previously presented) The process according to Claim 1, wherein the tensile fracture strength between the AlN region and the aluminum material is not less than the tensile fracture strength of the aluminum material and is 15 GPa or less.